ORIGINAL ARTICLE

Mindful Eating for a Sustainable Future: Predicting Organic Food Consumption among Malaysian Adults Using the Theory of Planned Behaviour

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ABSTRACT

Introduction: Safe and ecologically friendly foods are as important as nutrient-dense foods, fostering healthy lifestyles while preserving the environment. Globally, there is a shift towards organically grown food, perceived as safer and more sustainable. Yet, organic food adoption remains limited among Malaysian adults. This study explores the influencing factors of organic food consumption using the psychological theory of planned behaviour (TPB). **Materials and methods:** A cross-sectional survey was conducted in 2020, involving 424 Malaysian adults who were recruited through Facebook Advertisements (Ads). The ads were designed to target respondents based on age (18 years and above), geographical location (six zones of Malaysia), and interest in organic food. An online questionnaire hosted on Google Forms was embedded in the ads for data collection. The data were analyzed using descriptive analysis and structural equation modeling (SEM). **Results:** The study revealed that 72% of intention was explained by attitude, encompassing concern for health, food safety, and the environment, followed by perceived behavioural control and subjective norm. Actual consumption was influenced by intention, but with a small effect size, explaining 16% of the total variance. **Conclusion:** The structural TPB model demonstrates that attitudes, subjective norms, and perceived behavioural control significantly influence the consumption intention of organic food, subsequently predicting actual consumption. Hence, addressing these psychological factors is crucial in promoting sustainable food choices among Malaysian adults.
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INTRODUCTION

Food safety concerns, particularly regarding the use of pesticides and synthetic chemicals in agricultural food products, have been reported globally, including in Malaysia. This problem was demonstrated in 2018 when the Agri-Food and Veterinary Authority of Singapore (AVA) recalled iceberg lettuce that came from a Malaysian farm due to high pesticide levels (1). These incidents suggest that despite safety concerns, Malaysia's agricultural sector still relies heavily on conventional practices involving pesticides. Moreover, recent local news from Malaysia has highlighted the Consumers' Association of Penang (CAP) urging the government to ban glyphosate, a herbicide that remains commonly used in various crops and oil palm plantations (2). The CAP also emphasized the need to shift from conventional agricultural farming to organic methods due to the increasing demand for safer food.

Furthermore, as food safety gains prominence, the demand for organic food has surged globally. This trend is evident in Malaysia, as well as other developing countries such as Vietnam (3) and India (4). This demand is fueled by concerns about health, nutrition, food safety, quality, and environmental sustainability. Despite this trend, organic food consumption remains uncommon among Malaysians. Previous studies indicate that Malaysian adults rarely purchase organic products (5). Unlike this trend, developed countries like the USA and Italy report higher rates of regular organic

food consumption (6). This discrepancy demands an understanding of the factors influencing organic food consumption in Malaysia to promote mindful eating among consumers, which emphasizes not only personal health and well-being but also environmental considerations for a more sustainable food consumption (7). Additionally, organically grown food delivers equally or more nutritious foods that contain fewer pesticide residues, contribute positively to biodiversity through higher organic matter content in soil, and have lower emissions of greenhouse gases (GHGs) per hectare of farming compared to conventional farming (8).

Over the past decade, numerous studies on organic food consumption have predominantly employed the Theory of Planned Behaviour (TPB) over other behavioural frameworks such as the Health Belief Model (HBM) or Social Cognitive Theory (SCT) (9). TPB, developed by Ajzen (1991) from the Theory of Reasoned Action (TRA), emphasizes the significance of psychological factors in understanding behavioural intentions and actions. These factors include individuals' perceptions of attitudes, subjective norms, and perceived behavioural control (10). Each of these psychological factors is explained as follows.

Attitudes are formed as a result of outcome evaluations that shape one's behavioural beliefs (10). Concerns about health, safety, quality, and the environment drive positive attitudes towards organic food (11–13). These attitudes reflect consumers' perceptions of organic food, which influence their choice of organic food over conventional food. Meanwhile, subjective norms refer to social influences that highlight the impact of reference groups' approval or disapproval on behaviour (14). Notably, social influences affecting organic food consumption often stem from friends, family, coworkers, and specific reference groups (15).

Perceived Behavioural Control (PBC) reflects individuals' views on their ability to engage in a specific behaviour (10). Attributes like price and availability play a role in organic food consumption intentions (13). While perceived control over resources influences consumption intentions, price and availability concerns impede consumption, particularly among young adults in developing countries (12). Intention, influenced by attitudinal considerations and normative influences, predicts behaviour (10). TPB suggests positive intentions lead to specific behaviours. Despite this, numerous studies concentrate solely on consumption intention rather than actual consumption, particularly in developing nations (11). In Malaysia, few studies extend intention to actual consumption, and they often assess it through broad statements (16,17). This underscores the need for comprehensive research that connects consumers' intentions to their actual consumption behaviours.

Following that, there are inconsistencies and mixed findings from previous studies concerning factors that influence organic food consumption. In contrast to the findings of a study in Thailand (18), it was found that perceived behavioural control (PBC) does not significantly contribute to people's intention to consume organic food in Malaysia (13). According to the researchers, people can justify paying a higher price for organic food because of its benefits and desirable qualities. Furthermore, it has been reported that subjective norms had a significant influence on the intention to consume organic food norm, as people are more likely to follow the norms of their close ones (4,16). Others, however, discovered that the subjective norm had no significant effect on purchase intention. This could be because buying organic food is still not a social norm (11).

Therefore, this study aims to examine how psychological factors, namely attitudes, subjective norms, and perceived behavioural control, influence the intention to consume organic food, which subsequently leads to actual consumption. This will be achieved using the Theory of Planned Behaviour (TPB) through a structural equation modeling approach. Exploring these relationships could provide a more holistic understanding of the factors that drive or hinder organic food consumption among Malaysian consumers.

MATERIALS AND METHODS

This cross-sectional study involved Malaysian adults sampled through an online population-based survey conducted on Facebook between September and December 2020. Utilizing Facebook as a survey platform is a practical approach to gauge public opinion at a population level when traditional sampling frames are unavailable or challenging to access (20). Despite its non-probabilistic nature, this method is more viable and achievable than probability sampling, which is frequently impractical in the absence of a well-defined sampling framework. The Ethics Committee for Research Involving Human Subjects (JKEUPM) at Universiti Putra Malaysia granted ethical approval for human subject participation (Reference No: UPM/TNCPI/RMC/JKEUPM/ 1.4.18.2).

Sampling Procedure

Six separate Facebook advertisements targeted respondents from six different zones within Malaysia. Clicking on an advertisement directed respondents to a Google Forms questionnaire. Participation was limited to Malaysian citizens aged 18 to 60 who had heard about and were interested in organic food. Criteria were determined using Facebook's geographical, demographic, and interest-targeting features. Further inclusion criteria were established in a Google form, with only those eligible who based their food choices

on personal needs, preferences, and beliefs. Participants were also required to be fluent in either Malay or English. Those who met all of the inclusion criteria completed the entire questionnaire, while those who did not were excluded. Respondents were required to read the study description, provide consent prior to participation, and share their email addresses to avoid duplicate responses.

Sample Size Determination

The study's sample size was calculated using Soper's (2022) sample size calculator, a method employed in other health-related cross-sectional surveys (22,23). The minimum sample size required to employ the structural equation modelling statistical test was 334. Considering 30.0% of the non-response rate and 90.0% of the proportion of eligibility of the respondents a total of a minimum of 530 respondents were recruited in this study. A quota of respondents was set for each zone based on national distribution proportions for the first quarter of 2020 as shown in Table I to ensure diverse demographic representation.

Table I: Number of respondents for each zone

Zone	Population by state*	Total by zone*	% by population	No. of respondents
North	Perlis - 255.0 Kedah – 2,193.9 Penang - 1,783.6 Perak – 2,518.6	6,751.1	18.0%	95
Central	Kuala Lumpur– 6,368.0 Putrajaya – 108.9 Selangor – 6,569.5	13,046.4	35.0%	186
South	Johor – 3,776.6 Melaka – 936.9 Negeri Sembilan – 1,135.9	5,849.4	16.0%	85
East Coast	Kelantan – 1,904.9 Pahang – 1,682.2 Terengganu - 1,259.0	4,846.1	13.0%	69
Sabah	Sabah – 3,907.5	3,907.5	10.0%	53
Sarawak	Sarawak – 2,828.7	2,828.7	8.0%	42
Total		37,229.2	100	530

*In thousands
Ratio

Research Instrument

A structured questionnaire with three sections was used in this study to collect the data. The first section captured respondents' background information, including sociodemographic attributes such as city of residence, gender, age, marital status, ethnicity, education, monthly income, health status, self-reported BMI, and the presence of chronic disease. The second section encompassed psychological factors related to the Theory of Planned Behaviour (TPB), including attitudes, subjective norms, perceived behavioural control, intention, and actual consumption of organic food. Each factor was measured using adapted items from various studies. The attitudinal construct was evaluated using thirteen (13) items (13). The subjective norm construct, consisting of four (4) items (24). Perceived behavioural control was assessed using six (6) items (25,26). The consumption intention construct employed 5 items (27). All these constructs were assessed using a five-point Likert scale (1: strongly disagree and 5: strongly agree).

The actual consumption of organic food was measured using previous instruments (28,29). Specifically, respondents were asked to self-report their frequency of actual consumption of organic food within a year, considering 12 food groups. This was preceded by a question: "How often do you buy the following organic food for your own consumption?". The food groups were based on the organic food categories sold at Jaya Grocer, a local chain known for its numerous organic food products (30), to suit the Malaysian study setting. For each food group, consumption was scored as follows: "never; no intake" = 1, "rarely; once or twice a year" = 2, "sometimes; once or twice a month" = 3, "often; once a week" = 4, "always; more than once a week" = 5.

The instrument was pre-tested among a panel of experts for face and content validity assessment. The experts consisted of researchers specializing in 1) soil science, organic farming, organic fertiliser, and biofertilizer; 2) food insecurity, food and culture, food and nutrition security, malnutrition among low-income populations; 3) nutritional sciences, food safety, food contaminants, and probiotics; 4) food and consumer health; and 5) consumer behaviour studies. Later, the instrument was evaluated further in a pilot study involving 119 respondents recruited in a manner similar to that described in the sampling procedure, but without geographical or zone restrictions. The attitude construct yielded a three-factor solution, namely health, food safety, and environmental concern, while subjective norm, perceived behavioural control, trust, intention, and actual consumption of organic food yielded a one-factor solution. Each construct had a Cronbach's alpha of at least .70.

Data Analysis

The collected data were analysed using SPSS version 21.0 and Analysis of Moment Structure (AMOS) 20.0. Descriptive analysis was employed to provide an overview of the respondents' background. Pearson correlation was used to explore correlations among study variables, facilitating the assessment of discriminant validity. Structural equation modelling (SEM) using the maximum likelihood (ML) estimation method was employed to analyse the TPB model, allowing for an investigation into the contribution of psychological factors to intention and intention to actual consumption of organic food. This statistical technique enables the simultaneous analysis of complex relationships between variables (31,32).

Before conducting the structural equation modelling,

confirmatory factor analysis (CFA) was performed to ensure that the fit indices of the measurement models met acceptable criteria (further details are presented in the results section). Model fit of the measurement models was assessed through well-accepted goodness-of-fit (GOF) measures such as the ratio of chi-square to degrees of freedom (Chi-sq/df), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), Adjusted Goodness-of-Fit Index (AGFI), and Root Mean Square Error of Approximation (RMSEA) (31,33). Values of Chi-sq/df below 5, as well as values of GFI, CFI, NFI, TLI, and AGFI above 0.90, and RMSEA below 0.08, indicate a good fit. Nevertheless, the model is considered fit when it meets any three or four of the aforementioned fit indices (31).

RESULTS

Respondents' sociodemographic characteristics

In this study, 424 usable responses out of 530 were analysed. There was a higher proportion of women (83.3%) than men (16.7%) presented. The majority of respondents fell within the age range of 18 to 29, accounting for 37.7%. The subsequent occurrence was observed in 32.5% of individuals aged 30 to 39 and 29.7% of those aged 40 and above. The distribution of participants' ages seems to be evenly spread. In terms of ethnicity, the majority of participants (61.6%) are Bumiputera, encompassing Malays and non-Malay indigenous communities from Sabah and Sarawak. This is followed by Chinese respondents (27.4%), Indian respondents (9.4%), and individuals from other ethnic backgrounds (1.7%).

Regarding educational attainment, 93.2% of participants completed tertiary education, while only 6.8% completed secondary education, specifically the Malaysian Certificate of Education (SPM). The majority of participants reported a monthly income of RM 1,500 or more, accounting for 64.9% of the sample. Only 35.1% of respondents reported earning less than RM 1,500 per month. In terms of marital status, the majority of participants (52.6%) were found to be married, while the remainder (47.4%) were identified as single.

According to the survey results, a significant proportion of participants (90.3%) reported having no chronic diseases, while a smaller proportion (9.7%) indicated having been diagnosed with a chronic disease. Furthermore, the majority of participants (56.1%) reported having a BMI in the normal range of 18.5 to 24.9 kg/m2. The remaining individuals were classified as obese (12.7%) or overweight (21.5%), as determined by body mass index (BMI) values falling between 25 to 29.9 kg/m2 and exceeding 30 kg/m2, respectively. Only 9.7% of the participants had a body mass index (BMI) lower than 18.5 kg/m2, indicating underweight status.

Confirmatory Factor Analysis

As mentioned in the methodological part, the validity and reliability of the measurement model of each construct was examined through confirmatory factor analysis before employing structural equation modelling. Table II displays the results of the confirmatory factor analysis, indicating that all constructs have a satisfactory model fit since they met at least four of the goodness-of-fit indices (31). Although the RMSEA value for all constructs, except for consumption intention, was greater than 0.08, it is acceptable as the value falls within the range of 0.08 to 0.10, which could be classified as a mediocre fit model (34).

Table II: Model fit for each construct

Construct	x/df < 5.0	CFI	IFI	TLI	RMSEA
Attitude	3.796	.954	.954	.940	.081
Subjective norm	3.811	.989	.989	.967	.082
Perceived Behavioural control	.3.893	.974	.974	.958	.083
Consumption intention	1.436	.999	.999	.997	.032
Actual consumption	4.630	.944	.944	.930	.093

Besides, all constructs including the subconstruct of attitude, formed based on three attitudinal variables (food safety, health, and environmental concerns), met convergent validity with all standardized factor loading values above 0.5 as illustrated in Table III. The Average Variance Extracted (AVE) values were also greater than 0.5. The composite reliability (CR) values for all constructs were above 0.7, indicating a high level of internal consistency or reliability of the constructs (35). Additionally, the square roots of AVE for all subconstructs of attitude and other constructs were higher than the inter-construct correlations, indicating their discriminant validities, as shown in Tables IV and V respectively. These analyses demonstrate that each construct in this study is valid and reliable.

Table III: Factor loading, average variance extracted (AVE) and composite reliability (CR) for each construct

		Factor loading	AVE	CR
Attitude			.64	.84
Food Safety (FS)		.72	.57	.80
Item 1 (FS1)	To me, organic food is free from genetically modified organisms (GMOs).	.63		
Item 2 (FS2)	I think organic food does not contain artificial flavouring or colouring.	.81		
Item 3 (FS3)	To me, organic food is free from chemical pesticides	.81		

CONTINUE

Table III: Factor loading, average variance extracted (AVE) and composite reliability (CR) for each construct (CONT.)

		Factor loading	AVE	CR
Health (H)		.80	.60	.90
Item 1 (H1)	I am concerned about the usage of food additives in the food I take.	.88		
Item 2 (H2)	It's scary when I think about how much pesticides are used in the food I take.	.83		
Item 3 (H3)	I am concerned about the nutrient content in the food that I consume daily	.79		
Item 4 (H4)	I am concerned about my cholesterol intake.	.68		
Item 5 (H5)	I do care about my intake of fat.	.71		
Item 6 (H6)	I am concerned about how the food I take was processed.	.72		
Environment (EN)		.88	.63	.87
Item 1 (EN1)	I am greatly concerned about the negative effect of environmental pollution.	.70		
Item 2 (EN2)	For me, the government's efforts to control environmental pollution are still insufficient.	.62		
Item 3 (EN3)	I am aware that the prohibition of chemical pesticides in organic food production is good for the environment.	.91		
Item 4 (EN4)	I realize the ban on chemical fertilizers in organic food production is a way to produce more environmental-friendly food.	.90		
Subjective norm			.50	.79
Item 1 (SN1)	My family eats organic food.	.48		
Item 2 (SN2)	People who are important to me such as doctors and people who I know well think I should eat organic food.	.81		
Item 3 (SN3)	People who are important to me think that eating organic food contributes to good health.	.80		
Item 4 (SN4)	I intend to eat organic food because society accepts that it is a good choice.	.68		
Perceived behavioural control (PBC)			.54	.89
Item 1 (PBC1)	I am sure I can consume more organic food when I want to.	.67		
Item 2 (PBC2)	I believe I can afford to buy organic food.	.72		
Item 3 (PBC3)	I have time to look for organic food when I want to have it.	.71		
Item 4 (PBC4)	Despite being expensive, I prefer to consume organic food.	.64		
Item 5 (PBC5)	For me, consuming organic food would be possible.	.74		
Item 6 (PBC6)	If I wanted to, I could easily consume organic food.	.81		

CONTINUE

Table III: Factor loading, average variance extracted (AVE) and composite reliability (CR) for each construct (CONT.)

		Factor loading	AVE	CR
Perceived behavioural control (PBC)			.54	.89
Item 7 (PBC7)	I believe that I have the resources and the ability to consume organic food.	.83		
Consumption intention (CI)			.72	.93
Item 1 (CI1)	I am willing to consume organic food over non-organic food.	.87		
Item 2 (CI2)	I am willing to consume organic food because the benefits outweigh the costs.	.82		
Item 3 (CI3)	I have a positive attitude towards consuming organic food.	.84		
Item 4 (CI4)	I will likely consume organic food.	.87		
Item 5 (CI5)	I intend to consume organic food in the near future.	.84		
Actual consumption (AC)			.57	.94
Item 1 (AC1)	Organic fruits or vegetables	.64		
Item 2 (AC2)	Organic dairy and beverages (e.g., juice, milk, soy, oat, tea, coffee, puree or cordial)	.70		
Item 3 (AC3)	Organic chicken or meat products	.65		
Item 4 (AC4)	Organic rice, grains or dried goods (e.g., dried almond, cashew nuts, quinoa or chia seeds)	.78		
Item 5 (AC5)	Organic noodles or pasta	.81		
Item 6 (AC6)	Organic sauces, condiments or oil (e.g., soy sauce, apple cider coconut oil or olive oil)	.85		
Item 7 (AC7)	Organic herbs or spices (e.g., chilli flakes, black pepper or cinnamon powder)	.76		
Item 8 (AC8)	Organic cereal	.72		
Item 9 (AC9)	Organic biscuits or snacks	.72		
Item 10 (AC10)	Organic spreads or honey	.78		
Item 11 (AC11)	Organic sugar or salt	.81		
Item 12 (AC12)	Other organic product(s)	.81		

Table IV: Discriminant validity of the sub-constructs of attitude

Sub-construct	FS	H	EN
Food safety (FS)	**.75**		
Health (H)	.46**	**.77**	
Environment (EN)	.55**	.60**	**.79**

Note (s): The square roots of the AVE of each construct (on the diagonal/bold) and squared correlation coefficients (on the off-diagonal)
**Correlation is significant at the 0.01 level (2-tailed).

Table V: Discriminant validity of the constructs

	ATT	SN	PBC	CI	AC
Attitude (ATT)	**.77**				
Subjective norm (SN)	.52**	**.71**			
Perceived behavioural control (PBC)	.54**	.59**	**.74**		
Consumption intention (CI)	.68**	.60**	.65**	**.85**	
Actual consumption (AC)	.21**	.41**	.45**	.38**	**.75**

Note (s): The square root of AVE of each construct (on the diagonal/bold) and correlation coefficients, r (on the off-diagonal)
**Correlation is significant at the 0.01 level (2-tailed).

Furthermore, the overall measurement model fits the dataset [$\chi2$ (1671) = 3511.842; p = 0.000; $\chi2$/df = 2.102; CFI = .906; IFI = .906; TLI = .900; RMSEA = .051]. The value of the relative chi-square ($\chi2$/df) was well below 5, indicating an acceptable fit between the proposed measurement model and the collected data. Other fit indices, namely CFI, IFI, and TLI values, were above the minimum value of .90, and the RMSEA value was below the cut-off value of .08 (RMSEA = .050) (31).

Notably, several error covariance paths were added between items in the measurement model to improve fit. The model was modified based on modification indices (MI) above 15 obtained from the AMOS output. For the attitude construct, an error covariance path was added between item H4 "I am concerned about my cholesterol intake" and item H5 "I do care about my intake of fat." Both items refer to individual concerns about fat intake. In the perceived behavioural control construct, a covariance path was added between item PBC2 "I believe I can afford to buy organic food" and item PBC4 "Despite being expensive, I prefer to consume organic food." Both items measure an individual's perceived affordability of organic food. Similarly, an error covariance path was added between item EN1 "I am greatly concerned about the negative effect of environmental pollution" and item EN2 "For me, the government's efforts to control environmental pollution are still insufficient," as both items relate to concern about environmental pollution.

Additionally, an error covariance path was added between item IN4 "I will likely consume organic food" and item IN5 "I intend to consume organic food in the near future." Both items were related to an individual's inclination to consume organic food. An error covariance path was added between item AC8 "Organic cereals" and item AC9 "Organic biscuits or snacks," based on an assessment of MI (55.988). Both items could be related to breakfast or snacking meals.

On the same note, the statistical assumption of data normality required for employing structural equation modelling was satisfied. Specifically, the data exhibited a normal distribution, as evidenced by skewness values ranging from -2.055 to 0.385, and kurtosis values ranging from -1.025 to 5.745. These values fell within the acceptable range of absolute values less than 3 for skewness and less than 10 for kurtosis, as suggested by Kline (2015) (36). Furthermore, the dataset did not contain any potential outliers, as the highest value of Mahalanobis d-squared/df was 2.84 (116.464/41). This value is well below the cut-off threshold of 4 (31).

Structural equation modeling (Factors influencing organic food consumption)

Based on Figure 1, the structural model achieved significant and satisfactory goodness-of-fit indices as all suggested values were met: $\chi2$= 1866.528 (p < 0.001), df = 764, $\chi2$/df = 2.443, CFI = 0.910, IFI = 0.910, TLI = 0.903, and RMSEA = 0.058. These results indicate that the structural model fits the data well. Table VI provides a summary of the results for the four relationships examined. Particularly, the standardized path coefficients of attitude, subjective norms, and perceived behavioural control on the consumption intention of organic food were statistically significant (p < 0.001). Attitude exerted the greatest direct influence on the consumption intention of organic food (β = .531, C.R = 7.036, p < 0.001). This indicates that a more positive attitude toward organic food consumption, especially regarding food safety, health, and the environment, leads to a stronger intention to consume organic food. The next influential factor was perceived behavioural control (β = .280, C.R = 5.126, p < 0.001). Meanwhile, subjective norms had the least impact on behavioural intentions among the main psychological factors (β = .145, C.R = 2.440, p < 0.001).

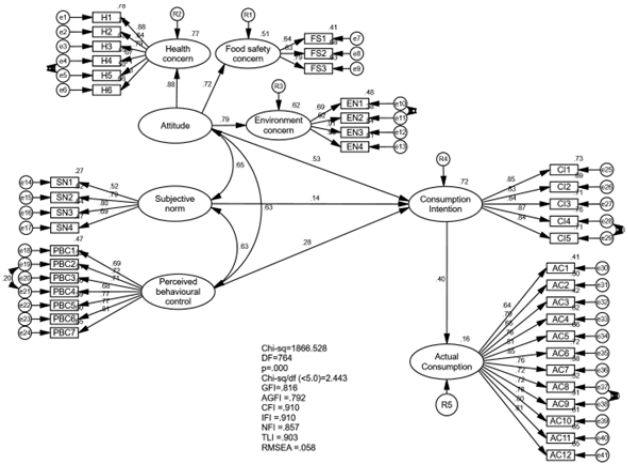

Figure 1: The Structural Model of the Theory of Planned Behaviour for Organic Food Consumption

Table VI: Regression weight of the direct hypothesized model

Path			Standardized Regression Weight Estimate (β)	Unstandardized Regression Weight Estimate (B)	S.E.	C.R.	p
ATT	→	CI	.531	.812	.115	7.036	***
SN	→	CI	.145	.209	.086	2.440	.015

CONTINUE

Table VI: Regression weight of the direct hypothesized model (CONT.)

Path			Standardized Regression Weight Estimate (β)	Unstandardized Regression Weight Estimate (B)	S.E.	C.R.	p
PBC	→	CI	.280	.274	.054	5.126	***
CI	→	AC	.405	.346	.047	7.382	***

Note: *** p < .0001; S.E. = Standard Error; C.R. = Critical

Overall, the structural TPB model of organic food consumption, comprised of psychological factors, demonstrated satisfactory predictive power. The coefficient of determination values, R2, for consumption intention and actual consumption of organic food, were both above the moderate level of .13 (37), with R^2 values of .719 and .164 respectively.

DISCUSSION

The study offers valuable insights, despite the sample being predominantly comprised of women, a trend commonly reported in previous studies focusing on health and well-being. Confirmatory factor analysis indicated a satisfactory model fit for all constructs, demonstrating both convergent and discriminant validity. The overall measurement model fit the dataset well, meeting recommended criteria. Furthermore, the structural model exhibited satisfactory goodness-of-fit indices, thereby establishing a significant relationship between the psychological factors of the intention and actual consumption of organic food.

The strongest influence on organic food consumption intention was attitude, followed by perceived behavioural control, and finally subjective norm. These findings add to the growing body of evidence that psychological factors influence adult food choices (38,39). This is also consistent with the TPB model's proposition that attitude has the strongest effect on behavioural intention, with individuals with a more favourable attitude being more likely to form an intention to perform certain behaviours (10,40). In this study, respondents' attitudes towards organic food consumption were assessed using their perceptions of health, food safety, and environmental concerns associated with organic food consumption. Similarly, a study among Vietnamese found that attitudes towards organic food were influenced by concerns about food safety and health, particularly concerns about the negative impact of pesticide use in vegetable production on their health (12). Furthermore, consumers define the value of organic food based on various characteristics such as chemical-free, pesticide-free, and hormone-free, and these attributes are undoubtedly related to environmental welfare as well, causing consumers who are concerned about food safety to be more environmentally conscious (9).

Perceived behavioural control (PBC) was also discovered to be a significant predictor of intention, implying that a greater sense of control over organic food consumption would lead to a higher likelihood of consumption intention. This psychological factor is frequently associated with how people perceive the price and availability of organic food. Several local studies have found that perceived behavioural control influences one's intention to consume organic food (16,27). Several previous studies in developing countries, including Thailand and India, found similar results (18,4). Despite the higher cost, people are willing to pay more for organic food because of the benefits. Furthermore, people tend to believe that cheaper organic food products have lower quality and fewer benefits (41).

Aside from that, it has been reported that organic food is more difficult to find than conventional food, which discourages consumers from engaging in its consumption. In a study conducted in Klang Valley, it was found that the majority of respondents expressed a desire for more accessible availability of organic food products near their residences (42). This preference arises due to the fact that organic food products are typically limited to high-end supermarkets located far from their homes., or alternatively sold through online platforms (43). Additionally, in Malaysia, the majority of organic food products are imported, contributing to their higher cost (44). This emphasizes the importance of securing a local supply of organic food in order to reduce reliance on imported organic food and, eventually, narrow the price gap.

The weakest correlation between subjective norm and intention to consume organic foods, on the other hand, corresponded to the TPB's prediction that subjective norm would have the weakest correlation with intention (10). Notably, this indicates that people are not being pressured to adopt sustainable consumption by those they regard as influential because it is not yet widely practised and accepted as an ethical standard to which one must adhere in order to be accepted by others. Nonetheless, subjective norms make a significant but minor contribution to organic food consumption intention when compared to the attitude and perceived behavioural control factors. In other words, respondents believe there is little social pressure to eat organic food. This is in line with previous research that used TPB as the underlying theory (18,45).

According to this study, the total variance of actual consumption of organic food explained by intention only accounts for 16% of the variance. This suggests that, while consumers may intend to consume organic food, they may not do so. Previous research from developing countries discovered similar trends (46,47). It may also be related to the individual's income level, affordability, availability, and trust issues in the governance of

organic food. Furthermore, the magnitude is lower when compared to a previous study which reported that the intention to consume organic food could explain 50.0% of the variance in actual organic food purchases in Germany (48). This disparity is most likely due to different study locations, where organic food is less widely available than in Germany's organic food market.

Furthermore, the price difference between organic and conventional food is much greater in Malaysia, with significant price differences ranging from 100.0% to 300.0%, compared to a pricing difference of 25.0% to 30.0% in the United States and European countries (44,49). Nonetheless, it was suggested that competing on price is not recommended; rather, suppliers of organic food should seek a strategy to increase knowledge and awareness of the high quality and product differentiation that organic food provides when compared to conventional counterparts (50). The goal of this strategy is to help consumers understand the value of organic food in relation to its cost. For instance, the lack of a comprehensive understanding of the unique benefits and characteristics of organic food influenced consumers' decisions to consume organic food in Vietnam (47). Consumers in developing countries, who typically face financial constraints, are expected to consider paying a higher price for food only if it is worthwhile. Therefore, it is critical to inform the public about how organic food benefits them rather than just what the benefits are.

While the current study provides valuable insights into the influence of psychological factors on the organic consumption habits of Malaysian adults, several limitations warrant consideration for future research. The nonprobability sampling method employed, along with self-selection bias and the overrepresentation of certain demographic groups, limits the generalizability of the findings to the entire adult population of Malaysia. To address this, future studies could adopt a random sampling approach and employ stratified sampling techniques to minimize biases and enhance sample representativeness. Additionally, relying on self-reported data for actual organic food consumption introduces the potential for inflated responses due to social desirability. Perhaps, future research might explore alternative methods, such as examining actual purchase records or employing dietary intake assessments through 24-hour dietary recall (24-h DR) and food frequency questionnaires (FFQs) to enhance accuracy. Further studies could also improve the predictive model by considering the inclusion of new variables with a direct impact on actual consumption, such as "price sensitivity" and "perceived food quality." By addressing these limitations and expanding the scope of relevant variables, future research can advance the understanding of organic food consumption patterns among Malaysian adults.

CONCLUSION

This study holds both theoretical and practical significance as it contributes additional evidence to the existing body of literature on the predictive capacity of the Theory of Planned Behaviour (TPB) for both intention and actual consumption of organic food. The structural model underscores the importance of psychological factors related to organic food consumption, emphasizing the need to communicate the impacts of organic food consumption on food safety, health, and the environment to the general public. This communication is crucial for fostering positive attitudes towards organic food among Malaysian adults. Additionally, the intention to consume organic food is influenced by individuals' perceptions of its availability and affordability, suggesting improvements in the supply chain are needed. Furthermore, this study highlights that a supportive social environment plays a pivotal role in motivating the shift towards sustainable food consumption. The relatively low predictive power of actual organic food consumption might be potentially explained by other affective factors that were not addressed in this study. Future research could explore into these factors to provide a more comprehensive understanding of actual consumption patterns, which would be beneficial in encouraging the consumption of foods that are not only nutritious but also safe and environmentally friendly.

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